BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, DC 20554

In the Matter of	
Expanding Flexible Use of the 3.7 to 4.2 GHz Band	GN Docket No. 18-122
Petition for Rulemaking to Amend and Modernize Parts 25 and 101 of the Commission's Rules To Authorize and Facilitate the Deployment of Licensed Point-to-Multipoint Fixed Wireless Broadband Service in the 3.7-4.2 GHz Band	RM-11791
Fixed Wireless Communications Coalition, Inc., Request for Modified Coordination Procedures in Band Shared Between the Fixed Service and the Fixed Satellite Service	RM-11778

COMMENTS OF THE SMALL SATELLITE OPERATORS (ABS GLOBAL LTD., HISPASAT S.A. AND CLARO S.A.)

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INTRODUCTION AND EXECUTIVE SUMMARY

This should be obvious. If a new spectrum allocation is incompatible with the provision of service by those already licensed to use that spectrum, the spectrum use rights of those incumbents will be impaired. Contrary to the self-serving suggestions of some, there is no magic loophole in the satellite licensing framework that would allow the Commission to eliminate C-band satellite service without affecting the legal rights of C-band satellite licensees:

- C-band satellite authorizations to transmit in the space-to-Earth direction include the right for those transmitted signals to be received free from impermissible interference. Part 25 makes this clear. It also ineluctably follows because successful reception is necessary to complete a space-to-Earth communications link.

- C-band satellite transmission rights are nationwide. They are not limited to specific earth stations. With a space station authorization, a satellite operator may transmit and have its signal received by any earth station anywhere in the United States with no further regulatory approvals.

- It makes no difference whether space station operations are authorized by a U.S. license or by a grant of U.S. market access (which was designed to be the equivalent of a U.S. license)—the rights of satellite operators are the same.

- Satellite transmission rights are subject to coordination with the Fixed Service ("FS"), and earth station registrations provide a mechanism for achieving such coordination. In the C-band, as in other spectrum, sharing rules facilitate co-existence among primary services by defining when interference is impermissible. These rules provide that interference from the FS is permissible unless the victim earth station is registered with (or licensed by) the Commission, an act that requires the registrant (or licensee) to undergo frequency and site-based coordination with existing and prior proposed FS stations.

- This earth station registration procedure does not apply, was never intended to apply, and could not reasonably apply to sharing between the Fixed-Satellite Service ("FSS") and the Flexible Use Service ("FUS"). Indeed, satellite transmission rights are not even subject to coordination with the FUS, a non-conforming radio service. Thus, satellite operators with a C-band authorization are entitled to interference protection from the FUS at all U.S. locations whether or not an earth station has been or could be registered.

- These rights demonstrate that satellite operators will lose spectrum rights anywhere FUS is deployed, whether a registered earth station is located nearby or not. They also demonstrate that the Commission cannot clear the band merely by convincing earth station operators ("ESOs") to relinquish their rights. If an ESO were to cancel its

registration or license, the rights of satellite operators would still be impaired, because satellite operators have an independent right to interference protection from the FUS that in no way depends on earth station registrations.

- The rights of space station operators do not mean that ESOs should not receive incentive-based compensation for their role in facilitating an expeditious and successful C-band transition. Commission precedent plainly supports incentivizing spectrum users whose prompt relocation is in the public interest—and ESO cooperation is vital to clearing spectrum quickly for 5G. ESO incentives are even more important if the Commission decides to reallocate more than 200 megahertz of spectrum.

- Taxpayers, too, are entitled to compensation. Because satellite operators possess their spectrum rights on a non-exclusive basis vis-à-vis other satellite operators, there is a "commons" component to C-band spectrum attributable to the possibility of licensing additional satellites in the future.

The above analysis demonstrates that while the Commission has considerable latitude to design an effective reallocation procedure, it cannot adopt either of the competing proposals being advanced by the C-Band Alliance ("CBA") and T-Mobile until and unless critical defects are resolved.[1]

The CBA proposal would exclude the SSOs from any recovery for their future loss in spectrum, while compensating CBA members for the exact same economic loss. This arbitrary and capricious double standard would pick winners and losers among satellite licensees in defiance of precedent, common sense, and even the CBA's own analysis of the economic harm caused by a partial reallocation. The CBA plan also fails to incentivize ESOs, even though their cooperation is essential to a prompt reallocation. Finally, the CBA has yet to propose a payment to taxpayers even though they, too, have a clear interest in C-band spectrum.

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[1] *International Bureau and Wireless Telecommunications Bureau Seek Focused Additional Comment in 3.7-4.2 GHz Band Proceeding*, Public Notice, DA 19-385 at 2 (Int'l Bur. & Wireless Telecomm. Bur. rel. May 3, 2019) ("*Public Notice*") (seeking comment on how the rights of satellite operators and ESOs impact the merits of pending record proposals); *see Expanding Flexible Use of the 3.7 to 4.2 GHz Band, et al.,* Order and Notice of Proposed Rulemaking, 33 FCC Rcd. 6915 (2018) ("*NPRM")*.

T-Mobile's incentive auction proposal is equally flawed. The forward auction would subsidize wireless carriers at taxpayer expense by decreasing the purchase price for FUS licenses to the price of supply set during the reverse auction, an amount which itself would be reduced artificially by T-Mobile's insistence that satellite operators bid against ESOs with no alternative mechanism for receiving value in exchange for the spectrum use rights they are forced to relinquish. Not only would T-Mobile's subsidy be unfair and unlawful under Section 309(j) of the Communications Act, it would eliminate any incentive for forward-auction participants to engage in competitive bidding—and thus any hope of achieving an efficient allocation of FUS licenses. The reverse auction would be unlawful for two additional reasons: ESOs and satellite operators are not "competing licensees" under Section 309(j) and thus cannot be forced to bid against each other as T-Mobile proposes. In addition, the reverse auction provides no opportunity for space station operators to supply spectrum "voluntarily," which the statute also requires.

In an attempt to sidestep the fatal defects with its proposal, T-Mobile relies on two specious arguments. First, T-Mobile incorrectly claims that FUS deployments will have no effect on satellite transmission rights. Yet FUS deployments are fundamentally incompatible with satellite transmission rights because they make successful reception of satellite signals impossible, as even T-Mobile recognizes.[2] Second, T-Mobile claims that the Commission may modify licenses under Section 316 to enforce the results of the incentive auction, however involuntary the outcome may be. But the Commission has no authority to modify authorizations

[2] *See, e.g.*, Comments of T-Mobile USA at 8, GN Docket No. 18-122 (filed Oct. 29, 2018) ("T-Mobile Comments") (explaining that "[s]ame-area frequency sharing is not technically possible because protecting satellite receivers from harmful interference from terrestrial emissions will require large separation distances that make sharing across the band infeasible"); Comments of Ericsson at 11-14, GN Docket No. 18-122 (filed Oct. 29, 2018); Comments of CTIA at 5-6, GN Docket No. 18-122 (filed May 31, 2018).

under Section 316 if doing so would effect a "fundamental change" to the terms of existing authorizations—and there is no change more fundamental than the forced relinquishment of spectrum access.[3] While T-Mobile claims that precedent supports the use of Section 316 to evict co-primary incumbents during a spectrum reallocation, none of the decisions it cites are on point.

Given these shortcomings in the CBA and T-Mobile proposals, the SSOs urge the Commission to pursue an alternative that would clear and make available spectrum for 5G more quickly, more effectively, more equitably, and with less legal risk. If the Commission believes that the transition should take place in the secondary market, it has the authority to ensure the transition mechanism fairly compensates all satellite operators, recognizes taxpayer interests, and incentivizes ESOs to cooperate with the band clearing, as the SSOs have explained.[4] If the Commission decides to auction the licenses, it likewise should ensure that these same objectives are met.

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[3] *See, e.g.*, *Community Television v. FCC*, 216 F.3d 1133, 1141 (D.C. Cir. 2000); *Cellco P'ship v. FCC*, 700 F.3d 534, 543 (D.C. Cir. 2012).

[4] Letter from Scott Harris and Shiva Goel, Counsel to the SSOs, to Marlene H. Dortch, Secretary, FCC, IB Docket No. 18-122 et al. (filed Mar. 25, 2019) ("SSO Mar. 25, 2019 Letter").

I. Satellite Operators Have Enforceable Rights Against Harmful Interference from the FUS That Are Independent of Earth Station Registrations or Licenses.

Satellite licenses and grants of U.S. market access provide satellite operators with right to transmit and have their signals successfully received anywhere in the country, unless a specific sharing rule imposes additional obligations. While sharing rules in Part 25 require earth stations to be registered with the FCC to claim protection from the FS, no such rules govern sharing with the FUS. Moreover, applying the registration regime to FSS-FUS sharing would be nonsensical, because everyone agrees that the two services cannot share spectrum. As a result, with respect to the FS, satellite operators have enforceable rights against harmful interference anywhere that an earth station has been (or could be) coordinated. With respect to the FUS, on the other hand, satellite operators' spectrum use rights are enforceable against harmful interference everywhere in the country, regardless of whether an earth station has been or could be registered.

Because FUS deployments will prevent the successful reception of satellite signals, these rights to spectrum use will be extinguished wherever the Commission permits primary FUS operations. Accordingly, the Commission can and should compensate all satellite operators authorized to operate in the C-band for the loss of spectrum rights that would result from repurposing the band for FUS operation.

A. Satellite licenses give operators the right to transmit *and be received* free from impermissible interference everywhere in the country.

The Commission seeks comment on "the extent to which satellite space station operators have enforceable rights against harmful interference from terrestrial stations in the C-band under their space station licenses and market access grants."[5]

[5] *Public Notice* at 2.

The Commission's rules provide a clear answer: satellite operators with "authorizations granted under [Part 25]" are "provided" "[p]rotection from impermissible levels of interference to the reception of signals by earth stations in the Fixed-Satellite Service from terrestrial stations" in the band.[6] The two subsections of 47 C.F.R. § 25.102 work in tandem to establish the framework for space station transmissions. Section 25.102(a) proscribes the "use or operat[ion]" of "apparatus for the transmission of energy or communications or signals by space . . . stations except under, and in accordance with, an appropriate authorization granted by" the FCC.[7] Section 25.102(b), in turn, specifies that the "authorizations granted" provide licensees with the right to protection from interference to the "reception" of those transmitted signals by their intended recipients.[8] Thus, a space station operator must receive authorization in order to transmit—and once that authorization is granted, the operator has an enforceable right to protection from impermissible interference on the entire space-to-earth communications link, including the receiver. The fact that space station authorizations permit the transmission "*of . . . communications*"[9] underscores the point, because the successful reception of a signal is a prerequisite for communication of any kind to take place.[10]

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6 47 C.F.R. § 25.102(b).

7 *Id.* § 25.102(a). While Section 25.102(a) also requires authorizations for the transmission of energy, communications, or signals by earth stations, earth stations do not transmit in 3.7-4.2 GHz.

8 *Id.* § 25.102(b).

9 *Id.* § 25.102(a). *See also* 47 U.S.C. § 153(49).

10 *See* 47 U.S.C. § 153(50) (defining the term "telecommunications" to involve "transmission[] between or among" more than one "point[]"); *see also* 47 C.F.R. § 25.158 (establishing procedures for granting space station licenses permitting "GSO-like satellite operation"); *id.* § 25.103 (defining "GSO-like satellite operation" to mean the "operation of a GSO satellite *to communicate* with earth stations with directional antennas, including operation of GSO satellites to provide MSS feeder links") (emphasis added).

These core enforceable rights apply at all locations throughout the United States, and not just where an earth station is sited.[11] Nothing in a space station authorization limits the right to successful reception to existing earth stations, or otherwise specifies permitted ground points of communication. Satellite operators thus do not need to apply for additional approvals or a license modification when they communicate with a new earth station. Indeed, once granted authority to transmit in the lower C-band, space station operators are free to deploy and communicate with receiving earth stations without further authorization.[12] Thus, while the rights of space station operators depend critically on the ability of earth stations successfully to receive their signals, it is not the case that space station operators have enforceable rights *only* where earth stations are sited. Enforceable rights to protection from impermissible interference are available anywhere that an earth station exists now or could be located in the future.

B. Earth station registration procedures in no way limit satellite operator rights vis-à-vis the FUS.

As noted, and as the Commission observed in the *Public Notice*, Section 25.102(b) provides satellite operators with protection against "impermissible" interference.[13] It thus leaves open the possibility that specific sharing rules designed to deconflict FSS operations with those of another co-equal radio service may help determine when interference is permissible. In the C-band, these sharing rules require the coordination of FSS operations with FS operations through the voluntary registration (or licensing) of earth station receivers.[14] To enforce such

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11 *NPRM* ¶ 10.

12 *See, e.g.*, 47 C.F.R. § 25.131(j)(2).

13 *See Public Notice* at 2.

14 47 C.F.R. § 25.131(c); *id.* §§ 25.203 & 25.251.

coordination, the rules permit interference from FS stations in the absence of an earth station registration (or license).[15]

This registration or licensing process ensures that existing co-primary services in the band respect each other's rights when new earth stations or fixed-service locations are sited. But ESO registrations or licenses are not the source of satellite operators' right to transmit and have their signals received free from impermissible interference, which, as explained, exists independently of any specific earth station.[16] Nor do the rules governing the earth station registration process impose any requirements beyond the grant of a space station authorization for claiming interference protection from a *new*, *prospective* use, like the FUS, with which there is absolutely no obligation to share the band. Put simply, earth station registrations implement a coordination rule that is completely inapplicable to FUS-FSS sharing. As a result, the Commission cannot reasonably conclude that "space station operators have a right to transmit free from harmful interference" from the FUS "only where there are registered earth stations receiving their signal."[17]

Indeed, it would be absurd to think that the earth station registration rule touches sharing between the FSS and the FUS, let alone determines the scope of satellite operators' interference protection rights with respect to the FUS. By its own terms, the rule governs sharing with "terrestrial microwave stations"[18]—and FUS facilities are not "terrestrial microwave stations."[19] The rule also applies only in bands "shared co-equally with the Fixed Service."[20] Yet FUS

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15 47 C.F.R. § 25.131(c).

16 *See* Section I.A., *supra.*

17 *Public Notice* at 3.

18 47 C.F.R. § 25.131(b).

19 *See* 47 C.F.R. § 101.3.

20 47 C.F.R. § 25.131(b).

licensees operate in the Mobile Service, which is not co-equal with the FSS (indeed it has no allocation in this band at all). More fundamentally, the rule was never intended to and cannot facilitate sharing with a service like the FUS. Pursuant to the earth station registration procedure, FSS and FS operators share spectrum pursuant to first-in-time, first-in-right coordination principles.[21] First-in-time, first-in-right coordination assumes that two co-equal services can co-exist through site-based coordination and frequency coordination. However, as even 5G proponents would concede, that assumption does not hold true with respect to the FSS and the FUS—which is why the FCC has proposed to repurpose the band in the first place.[22]

Finally, at the risk of stating the obvious, "[t]here is no allocation for [the mobile service] in this band."[23] Thus, to permit the entry of FUS operations, the Commission has proposed to "add a mobile, except aeronautical mobile, allocation."[24] As a result, under established Commission precedent, FUS operations would today be possible only if the FUS licensee were willing to accept any interference from FSS users *and* could protect incumbent satellite operations from harmful interference, with no further coordination through ground registrations, licenses, or other requirements needed.[25] Put simply, the rights of co-primary licensees in the C-band vis-à-vis *each other*, and the nature of the coordination process among them, shed no light

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21 *See* 47 C.F.R. § 25.131(b). *See also id.* § 25.203(c)(3); *id.* § 25.251; *id.* § 101.103.

22 *See, e.g.*, Reply Comments of AT&T at 17-18, GN Docket No. 18-122 (filed Dec. 11, 2018); Ericsson Comments at 4-7; CTIA May 2018 Comments at 5-6; Comments of Nokia, GN Docket No. 18-122 (filed Oct. 29, 2018); *NPRM* ¶ 58.

23 *Application of Fugro-Chance, Inc.*, Order and Authorization, 10 FCC Rcd. 2860 ¶ 1 (1995); *see also* 47 C.F.R. § 2.106 (providing that the 3.7-4.2 GHz is allocated for the FS and FSS).

24 *NPRM* ¶ 1.

25 *See*, *e.g.*, *PanAmSat Licensee Corp.*, Order and Authorization, 20 FCC Rcd. 14,642, 14,644 ¶ 8 (2005); *Boeing Co.*, Order and Authorization, 16 FCC Rcd. 22,645, 22,651 (2001). Of course, a showing of non-interferent operations cannot be made here–which is the entire point behind the Commission's careful evaluation of how best to alter its allocations without unfairly stranding the investments of incumbent licensees.

on the rights of licensees vis-à-vis non-conforming band entrants. C-band satellite operators have enforceable rights to protection from interference from non-conforming uses like terrestrial mobile operations at *any* present or future earth station receiving their signal, regardless of whether it is registered with the FCC or licensed.[26]

C. T-Mobile is wrong: FUS operations plainly interfere with space station transmission rights.

T-Mobile nevertheless suggests that the Commission can ignore satellite operators' rights because new terrestrial mobile operations would interfere with "earth station operations" but, weirdly, not the "space-to-earth transmissions" permitted by a satellite authorization.[27]

This makes no sense. To complete a space-to-earth communications link, the signal beamed from the space station must be received. As a result, "space-to-earth transmissions" plainly suffer harmful interference when emissions from another service prevent the successful reception of the transmitted signals; after all, successful reception is the entire point of transmission. Indeed, under T-Mobile's view, it would be *impossible* for satellite transmissions to experience harmful interference. Yet Section 25.102(b) recognizes that such interference is not only possible but safeguarded against by a space station authorization.

T-Mobile's position also fails to acknowledge that satellite operators are entitled to engage in the transmission of "communications,"[28] which requires successful reception at a second endpoint of the signal. Similarly, T-Mobile's position is fundamentally inconsistent with basic nature of communications in a wireless network. As the Commission recently recognized,

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[26] *See* 47 C.F.R.§ 25.131(b) (providing that registrations of receive-only earth stations facilitate protection "from *terrestrial microwave stations* in bands shared co-equally with the *Fixed Service*") (emphasis added).

[27] Letter from Russell H. Fox, Counsel T-Mobile USA, Inc., to Marlene H. Dortch, Secretary, FCC, GN Docket No. 18-122, at 8 (filed Apr. 11, 2019) ("T-Mobile Apr. 11, 2019 Letter"); *see Public Notice* at 3.

[28] 47 C.F.R. § 25.102(a); *see also* 47 U.S.C. § 153(49); 47 C.F.R. § 25.103.

the Part 25 rules provide for "interference-free operation" of a "satellite network," which contains both a "ground component and space component."[29] Interference with the ability of the "ground component" of the network to receive the transmitter's signal is interference with the satellite network itself.

Finally, as explained above, satellite operators have a right to interference-free transmission with respect to the FUS *regardless of whether an earth station is registered*. They have the authority to deploy earth stations that receive their signals anywhere in the country, and registrations are not required to ensure that these operations are fully protected from FUS interference. As a result, when FUS operations interfere with ground reception, the interference impairs the rights of satellite operators, and not any rights obtained through the earth station registration procedure.[30] T-Mobile cannot so easily circumvent the rights of satellite operators that have made significant investments in the C-band.

D. The rights provided by grants of U.S. market access are no different.

The Commission has also asked whether there "is any distinction between the enforceable rights, if any, accorded to U.S.-licensed space stations and non-U.S.-licensed space stations that have been duly approved for U.S. market access?"[31] There is none. Grants of U.S. market access are "authorizations" made pursuant to Part 25 of the Commission's rules, just like licenses for U.S. space stations, and provide the same "protection" from interference under 47 C.F.R. § 25.102(b).

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[29] *In the Matter of Further Streamlining Part 25 Rules Governing Satellite Services*, Notice of Proposed Rulemaking, IB Docket No. 18-314, FCC 18-165, ¶ 4 (rel. Nov. 15, 2018) ("*Part 25 Streamlining NPRM*").

[30] *See also* Section III.B, *infra.*

[31] *Public Notice* at 3.

The Communications Act's statutory definitions, as well as the terms defined in Part 25, further establish that U.S. licenses and grants of market access provide the same operational rights. The Commission's rules explicitly incorporate "U.S.-licensed" GSO space stations "*as well as* non-U.S.-licensed [GSO] space stations approved for U.S. market access" into the definition of the "Permitted Space Station List," which is the "list of all" satellites authorized by the FCC to provide FSS "in the conventional C band, the conventional Ku band, or the 18.3-18.8 GHz, 19.7-20.2 GHz, 28.35-28.6 GHz, and 29.25-30.0 GHz bands."[32] Likewise, the statutory definition of a "station license" makes clear that the "name" given to "the instrument" is irrelevant.[33] Whether it is called a grant of market access or a Part 25 license, the same authority is provided for the "use or operation" of wireless facilities.

The Commission's precedent supports this sensible approach. In the *DISCO II* proceeding, the Commission found that there was "no reason to treat any non-U.S. licensed satellite differently than U.S. satellites once we have determined to grant it access to the United States market for fixed-satellite services in the conventional C- and Ku-bands."[34] It would be contrary to the Commission's longstanding policy, and the United States' commitments to international partners under the WTO Telecom Agreement, to distinguish between the enforceable rights granted to U.S. and non-U.S. satellites.[35]

The Commission's procedures governing grants of market access under *DISCO II* reflect this approach. The Commission requires satellite operators seeking U.S. market access to submit

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[32] 47 C.F.R. § 25.103 (emphasis added).

[33] *See* 47 U.S.C. § 153(49) (defining the terms "station license," "radio station license," or "license").

[34] *Amendment of the Commission's Regulatory Policies to Allow Non-U.S. Licensed Space Stations to Provide Domestic and International Satellite Service in the United States*, First Order on Reconsideration, 15 FCC Rcd. 7207 ¶ 19 (1999) ("*DISCO II First Order on Reconsideration"*).

[35] *See id.* ¶ 3.

detailed documentation so the Commission can "determine whether the non-U.S. satellite will operate consistently with all applicable Commission requirements, including technical requirements."[36] And when the Commission determines to grant market access, it does so in a Declaratory Ruling that "contain[s] any additional operating conditions or constraints on earth stations accessing th[e] satellite."[37] Subject to those specified operating conditions or constraints, market access grantees are placed on the Permitted Space Station List, and U.S. earth stations may communicate with them "just as easily as they communicate with any U.S.-licensed satellite."[38] By way of example, "[o]perators of receive-only earth stations need not apply for a license to receive transmissions from non-U.S.-licensed space stations that have been duly approved for U.S. market access," provided the stations follow the Commission's rules and comply "with applicable conditions in the Permitted Space Station List or market-access grant."[39]

II. These Rights Demonstrate that the Current CBA Proposal Is Unlawful and Unwise.

In its initial comments, the CBA proposed to exclude the SSOs from compensation for their loss of spectrum rights, even though each SSO holds the same rights as CBA members.[40] The SSOs previously explained why the proposed exclusion would be arbitrary, capricious, inequitable, and contrary to precedent.[41] The SSOs further explained that other stakeholders—

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36 *Id.* ¶ 11; *see also* 47 C.F.R. § 25.137(d).

37 *DISCO II First Order on Reconsideration* ¶ 12.

38 *Id.* ¶ 16.

39 47 C.F.R. § 25.131(j)(2).

40 *See* Comments of the C-Band Alliance at 28, 55, GN Docket No. 18-122 (filed Oct. 29, 2018).

41 Letter from Scott Blake Harris and Shiva Goel, Counsel to the SSOs, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 18-122 et al. (filed Feb. 21, 2019) ("SSO Feb. 21, 2019 Letter").

specifically ESOs and taxpayers—also should receive compensation in order for the transition to proceed equitably and efficiently.

As explained below, the nature of satellite transmission rights provides even more reason for the Commission to ensure that proceeds are allocated to all eight satellite operators authorized to serve the United States in the C-band, and not just the four members of the CBA. It also provides substantial support for ensuring that taxpayers receive a share of proceeds generated by the repurposing. Moreover, while ESO registrations protect against interference from the FS, it does not follow that ESOs are barred from receiving compensation for relocation due to FUS deployments. ESOs can and should receive financial incentives to ensure an effective, efficient, and prompt transition to flexible use.

A. The CBA's proposed exclusion of the SSOs would be arbitrary and capricious and contravene FCC precedent.

As discussed, satellite operators have a right to transmit free from harmful interference at existing and future earth stations subject only to coordination with the FS. But if deployed in the band, FUS operations would make it virtually impossible to transmit to most places, because they would cause widespread harmful interference with satellite transmission links at the earth station receiver. As a result, all satellite operators authorized to transmit in the C-band in the United States will suffer a significant loss in spectrum access if the Commission creates a new primary allocation for terrestrial mobile services. Though it should go without saying, the impairment in rights occurs regardless of how much revenue the satellite operator generated in the past, because a reallocation would result in the loss of spectrum access and corresponding revenue in the future.

The CBA proposal nevertheless excluded the SSOs from compensation, purportedly based on the SSOs' lack of 2017 revenue. Yet in no way do a satellite operator's spectrum rights

depend on the amount of its past revenue. Satellite licenses and grants of U.S. market access are not conditioned on prior revenue generation. They merely require timely launch and operation of the space station proposed[42]—and each SSO has met that requirement.[43] Moreover, satellite authorizations permit transmission to both existing and future earth stations, and not just to earth stations currently deployed to serve a preexisting customer base.[44] As a result, a satellite operator's transmission rights will be impaired if a newly allocated service interferes harmfully with satellite reception anywhere within the license area, even if the operator does not yet communicate with a registered earth station.

Indeed, if it were true that satellite operators have rights to transmit only to their 2017 customer base, then CBA members, too, would have no claim to compensation. The CBA straightforwardly admits that repurposing 200 megahertz of spectrum would not impede its members' ability to serve their existing customers whatsoever.[45] At the very least, the compensation due to the CBA would be substantially reduced, because many CBA satellites authorized for C-band use in the United States do not "appear to provide service to earth stations in the CONUS."[46]

The SSOs understand that, even if CBA members were able to maintain existing service levels after a reallocation, they would still lose future access to spectrum as a result of a partial

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42 *See* 47 C.F.R. § 25.164.

43 Though it is irrelevant, the SSOs all had plans to market or were actively marketing services using C-Band spectrum in the United States. *See* Reply Comments of ABS Global Ltd., Hispasat S.A., and Embratel Star One S.A. at 15-17, GN Docket No. 18-122 (filed Dec. 11, 2018) ("SSO Reply Comments").

44 *See* Section I.A, *supra.*

45 *See, e.g.*, Letter from Jennifer Hindin, Counsel to CBA, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 18-122 (filed May 15, 2019) ("The CBA's proposal is designed to quickly repurpose some spectrum *while ensuring no loss of C-Band service by our customers or their end users.*") (emphasis in original).

46 *See* Letter from Colby May, Counsel to Trinity Broadcasting, to Marlene H. Dortch, Secretary, FCC, at 4, GN Docket No. 18-122 (filed May 16, 2019) ("Trinity May 16, 2019 Letter").

reallocation. But if that is the economic loss for which they seek compensation, and it is, then *all* licensees suffering the same harm should be treated similarly. Put simply, the CBA cannot have it both ways. Either it must acknowledge that the harm to its members arises from the future loss of spectrum rights and compensate all satellite operators for the same loss. Or it must pretend that the harm to satellite operators lies in their diminished ability to maintain 2017 revenues and accept the vastly reduced—and perhaps nonexistent—compensation that would result.

Not surprisingly then, the CBA's own economic analysis demonstrates that satellite operators' entitlement to compensation flows from the loss of future spectrum rights, and not past revenues. In a paper filed on behalf of Intelsat, Intel, and SES, Dr. Coleman Bazelon explains that the largest component of "transition costs" to FSS operators is the "economic value of lost satellite assets," which "reflect[s] capital costs that must be written off as a result of the spectrum clearing."[47] Dr. Bazelon further explains that this reduction in value can be estimated by "calculating the lost profits to satellite providers from leasing C-Band transponder capacity."[48] According to Dr. Bazelon, those lost profits "will be equal to the net present value of the profits of C-Band transponders over the remaining service life of the satellite," which he calculates by discounting "annual revenue stream[s]" on a going forward basis, projected using an estimate of the average price per unit of C-band capacity in 2022 and each satellite's years remaining in orbit.[49]

Dr. Bazelon has it exactly right. His calculation makes clear that losses experienced as a result of a partial reallocation depend not on revenues earned in 2017, but on the expected life

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[47] Joint Comments of Intel Corp., Intelsat License LLC, and SES Americom, at Attachment p. 15, GN Docket No. 18-122 (filed Oct. 29, 2018).

[48] *Id.*

[49] *Id.* at Attachment pp. 15-16 (emphasis added).

and licensed capacity of each C-band satellite—which are the precise factors the SSOs used to allocate proceeds among satellite operators in their example of a potential distribution and scoring model.[50] The CBA must heed the advice of its own economic expert and abandon its past-revenue-centric approach, and allow the transition facilitator to allocate proceeds using these same metrics under a secondary-market approach.

Dr. Bazelon's analysis also makes clear that each unit of repurposed spectrum will disproportionately affect licensed new entrants like the SSOs—which makes the CBA's double standard even less defensible. Because the average age of the SSO fleet is about half that of Intelsat and SES, the SSOs will have an average of more than 9 years of life remaining on the satellites affected by the repurposing (as of 2021) compared to just 4 years for Intelsat and 2.5 years for SES.[51] As a result, on a per satellite (or dollar invested) basis, the SSOs have far more to lose; the time value of their invested capital is just more significant. The SSOs' lack of flexibility to distribute capacity across multiple satellites magnifies the problem, because it means that each unit of repurposed C-band capacity will result in a greater future revenue loss. Thus, not only do the economics of the matter foreclose excluding the SSOs, they provide reason to ensure that the SSOs, on average, receive greater amounts per satellite than the CBA's existing members.

Commission spectrum-management precedent also supports this view. As the SSOs explained previously, a past-revenue requirement would clash with the FCC's well-established understanding of incumbency in the very decisions relied on by the CBA to support its

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[50] *See* Letter from Scott Blake Harris, Counsel to the SSOs, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 18-122 (filed Dec. 18, 2018) ("SSO Dec. 18, 2018 Ex Parte").

[51] *See id.* at Attachment pp. 12-13.

secondary-market proposal.[52] In those decisions, the FCC allowed co-primary incumbents to receive compensation for the loss in future spectrum access by granting them new flexible use rights.[53] Not once did the Commission condition the expansion of spectrum use rights on any amount of past revenue. To the contrary, the Commission explicitly declined to require revenue of any kind—even in circumstances where incumbents had accomplished far less than the SSOs in building facilities authorized by their license.

For example, when it expanded terrestrial use of the AWS-4 band, the Commission explicitly recognized that neither of the two incumbent MSS licensees had made any use of their ancillary terrestrial component ("ATC") authorizations.[54] Nevertheless, it agreed to "replace" those authorizations "with full flexible use terrestrial authority" by assigning the incumbents new Part 27 licenses.[55] The Commission pursued the same approach more recently in millimeter-wave spectrum that it repurposed for flexible use as part of its Spectrum Frontiers proceeding. In the 28 GHz and 39 GHz bands, the Commission granted flexible use rights to co-primary incumbent fixed-service licensees.[56] In doing so, it recognized that many incumbents had yet to

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52 *See generally* SSO Feb. 21, 2019 Letter.

53 *Service Rules for Advanced Wireless Servs. in the 2000-2020 MHz & 2180-2200 MHz Bands*, 27 FCC Rcd. 3561, 3566 ¶ 8 (2012) ("*AWS-4 NPRM*"); *Use of Spectrum Bands Above 24 GHz for Mobile Radio Servs.*, Report and Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd. 8014, 8031, 8901-92 ¶¶ 41-42, 219-220 (2016) ("*Spectrum Frontiers First Report and Order*"); *Application of AT&T Mobility Spectrum LLC and FiberTower Corporation for Consent to Transfer Control of 39 GHz Licenses*, Memorandum Opinion and Order, 33 FCC Rcd. 1251, 1259 ¶ 22 (Wireless Telecomm. Bur. 2018) ("*AT&T-FiberTower Order*"); *Application of Verizon Communications Inc. and Straight Path Communications, Inc. For Consent to Transfer Control of Local Multipoint Distribution Service, 39 GHz, Common Carrier Point-to-Point Microwave, and 3650-3700 MHz Service Licenses*, Memorandum Opinion and Order, 33 FCC Rcd. 188, 192 ¶ 11 (Wireless Telecomm. Bur. 2018) ("*Verizon-Straight Path Order*").

54 *AWS-4 NPRM* ¶ 8 ("To date there remains little commercial use of this spectrum for MSS and none for terrestrial (ATC) service").

55 *Service Rules for Advanced Wireless Servs. in the 2000-2020 MHz & 2180-2200 MHz Bands*, 27 FCC Rcd. 16102, 16104 ¶ 2 (2012).

56 *See Spectrum Frontiers First Report and Order* ¶¶ 41-42, 219-220.

deploy facilities, let alone roll out the commercial services necessary to generate revenue.[57] Indeed, the Commission even extended construction deadlines to enable unbuilt incumbents in the 28 GHz and 39 GHz bands to receive the benefits of the spectrum repurposing.[58]

Then, when reviewing applications from millimeter-wave incumbents to sell flexible use spectrum on the secondary market after the repurposing concluded, the Commission *again* declined to impose a commercial revenue requirement. The FCC approved AT&T's acquisition of FiberTower Corporation, even though FiberTower failed to construct facilities using the vast majority of licenses subject to the transfer of control.[59] Indeed, the FiberTower sale was only made possible by the FCC's decisions to settle claims around FiberTower's non-compliance with construction deadlines and to grant a waiver reinstating hundreds of unbuilt FiberTower licenses.[60] Similarly, the Commission settled its claims against Straight Path Communications, Inc. for buildout violations in the millimeter-wave bands to facilitate Straight Path's transfer of unbuilt licenses to Verizon.[61] Needless to say, none of these Commission decisions even plausibly support carving out the SSOs, who *have* complied with the Commission's licensing rules and *actually launched* C-band satellites.

Likewise, in the EBS/BRS proceeding on which the CBA also relies, the FCC granted additional use rights to any incumbent licensee so long as the licensee "complied with our existing rules and continue[s] to comply with our new rules."[62] The FCC did not apply a

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57 *See id.*

58 *Id.* ¶¶ 219-220.

59 *See AT&T-FiberTower Order* ¶ 22.

60 *Id.* ¶¶ 6, 22.

61 *Verizon-Straight Path Order* ¶ 11.

62 *Amendment to Parts 1, 21, 73, 74 and 101 of the Commission's Rules to Facilitate the Provision of Fixed and Mobile Broadband Access, Educational and Other Advanced Services in the 2150-2162 and 2500-2690 MHz*

threshold requirement of past revenue as the CBA seeks to do; in fact, it explicitly declined to "reclaim licenses" from any incumbent in good standing.[63]

Departing from these precedents and imposing a revenue requirement here would not only be arbitrary and capricious, it would be poor spectrum-management policy, because it would exclude licensees that have built licensed C-band facilities. Unlike many past incumbents, the SSOs have met all milestones applicable to their authorizations, and have successfully deployed licensed facilities after hundreds of millions of dollars of U.S.-focused investment.[64] There is no plausible justification for singling out those investments, which were made in reliance on the Commission's longstanding rules in the band, and leaving them stranded simply to provide even more compensation to just four CBA members.

B. The CBA must include other stakeholders.

In its initial proposal, the CBA sought to enrich its four members even further by excluding taxpayers and ESOs as well as the SSOs. Despite numerous filings addressing other shortcomings, the CBA has yet to propose any mechanisms for incentivizing ESOs or recognizing taxpayer interests in a secondary-market transition. As explained below, the CBA's continued effort to hoard transition proceeds would result in a much riskier and much longer C-band transition. It also would be inconsistent with the nature of operating rights in this band.

1. ESOs.

While space station operators are the parties whose enforceable rights are most diminished by clearing the lower C-band, ESOs have interests in the band as well, and they

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Bands, Report and Order and Further Notice of Proposed Rulemaking, 19 FCC Rcd. 14,165, 14,176 ¶ 20 (2004).

63 *Id*.; *see also id.* ¶¶ 6, 73-74.

64 *See* SSO Reply Comments at 14-15.

ought to be compensated for their role in the transition. As an initial matter, compensating ESOs would not unreasonably expand the Commission's understanding of spectrum incumbency. While ESO registrations protect them against harmful interference from the FS, the point of that protection will evaporate if FUS operators are permitted in the band. Moreover, the terms of ESOs' FCC registrations (or licenses) will change if and when they are forced to relocate their operations to different frequencies and potentially different satellites. In addition, ESOs, like space station operators, have made investments in the band in reliance on the current licensing and registration system.[65] It would be good spectrum management to ensure that those investments are respected, and to recognize the relocation costs that ESOs will have to incur.

As significantly, ESOs will have to play an essential role if the band is to be cleared quickly. And there are far too many ESOs for the Commission to rely on individual negotiations with the CBA to effectuate a successful transition. As a result, the Commission has every reason to ensure that ESOs receive a meaningful incentive payment conditioned on their prompt relocation to other spectrum.[66] These incentive payments should be sufficient in amount to reduce the risk of lengthy disputes over the amount of reasonable relocation costs.

The CBA, however, continues to rely on an unenforceable "Customer Commitment"[67] that many C-band users believe is simply insufficient.[68] Given the stakes of this proceeding for swift 5G deployment, the CBA's current plan is a non-starter. The Commission can insulate the transition process from disruptive disagreements over the terms of ESO relocation by ensuring

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65 *See* SSO Mar. 25, 2019 Letter at 5.

66 *Id.*

67 *See* Letter from Henry Gola, Counsel for the C-Band Alliance, to Sec. Marlene Dortch, GN 18-122 (filed Apr. 3, 2019).

68 *See, e.g.*, Trinity May 16, 2019 Letter; Reply Comments of Comcast Corporation and NBCUniversal Media, LLC at 4, 11-12, GN Docket No. 18-122 (filed Dec. 11, 2018).

that transitioning to an upper portion of the band makes sound business sense for ESOs. Achieving that is as simple as requiring the transition facilitator to provide ESOs with meaningful financial incentives, sensibly structured. As the SSOs previously explained, taking this step would be consistent with Commission and D.C. Circuit precedent sanctioning financial encouragement for spectrum users forced to relocate.[69]

2. Taxpayers.

Taxpayers also have a direct interest in the changes to the band that the Commission has proposed—and this interest goes well beyond the public's general stake in ensuring that spectrum is used effectively. As discussed above, the rights of satellite operators described above are geographically non-exclusive with respect to other FSS operators. This means that while only one satellite can occupy a given orbital slot, satellites across many orbital slots are authorized to transmit in the lower C-band across the U.S. market.[70] As a result, while the non-exclusive licensing regime in the C-band provides for spectral efficiency through frequency reuse, new satellite systems might have applied to share the spectrum that the Commission wishes to reallocate as part of this proceeding, paying fees and generating value for the U.S. public. The C-band thus has a "commons" component, as the relinquishment of rights by such future spectrum users would reflect value forgone by the public, and not by any specific licensee.

The CBA's current plan simply ignores the public's interest in this non-exclusively licensed spectrum. That is simply unreasonable. As the SSOs explained, the Commission has clear authority to require a substantial payment to the Treasury under these circumstances.[71]

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69 *See* SSO Mar. 25, 2019 Letter at 5-6.

70 *See NPRM* ¶ 10.

71 *See* SSO Mar. 25, 2019 Letter at 7.

Thus, if the Commission decides to adopt a secondary-market proposal, it should use its authority to ensure that taxpayers receive a reasonable share of the proceeds generated.

III. T-Mobile's Proposal Unlawfully Shortchanges Taxpayers and FSS Incumbents.

T-Mobile claims that it has devised a way to "comply with the Communications Act, allow participation by all stakeholders, and benefit U.S. taxpayers" through an incentive auction.[72]

This all sounds reasonable, at first blush. But while the SSOs remain open to any auction mechanism that is lawful and would meaningfully compensate all C-band stakeholders, T-Mobile's proposal fails both requirements. In direct violation of Section 309(j), T-Mobile's proposal would install an unprecedented subsidy mechanism into the forward auction that would transfer value from taxpayers into the hands of wireless carriers. T-Mobile's reverse auction, in turn, would force satellite operators to underbid ESOs that hold different, less valuable, and incommensurable rights, thereby violating the statutory mandate that reverse auctions proceed voluntarily and with at least two "competing licensees."

Not only are these features inequitable and unlawful, they would doom the auction to failure from an economic perspective. Forward auction participants would have the incentive to bid as high as possible—not based on their actual valuation of the band—thereby undermining the auction's ability to allocate terrestrial licenses efficiently. Reverse auction participants, on the other hand, would have every incentive to bid as low as possible, because bidding well below the true value of the spectrum would provide them with the only opportunity to receive any value for the relinquishment of their rights. Section 316 does not allow the Commission to overlook

[72] Letter from Steve Sharkey, Vice President of Government Affairs for T-Mobile, to Marlene H. Dortch, Secretary, FCC, at 1, GN Docket No. 18-122 (filed Feb. 15, 2019) ("T-Mobile Feb.15, 2019 Letter").

these fundamental errors in auction design. Accordingly, the Commission cannot adopt T-Mobile's current proposal.

A. The forward auction would provide wireless carriers a massive taxpayer-funded subsidy and would allocate licenses inefficiently.

Though T-Mobile is quick to claim that its proposal is taxpayer-friendly, it has snuck a massive, taxpayer-funded subsidy into the forward auction that would violate Section 309(j) and eliminate any possibility of an efficient allocation of FUS licenses.

Section 309(j) provides that taxpayers should receive the difference between the amount generated by an auction and the amount demanded by existing spectrum users, net of Commission expenses.[73] Yet T-Mobile would allow wireless carriers to usurp that difference in value by decreasing the forward auction purchase price to the price of supply reached during the reverse phase. Specifically, to produce an outcome during the reverse auction where only one bidder agrees to clear the band at the offered price, T-Mobile proposes to "reduce[]" the "purchase price" offered to reverse auction participants over multiple iterations, "until only one group of operators – satellite or terrestrial – accept[s] the price."[74] Critically, in a sharp departure from past practice, that "purchase price" would reflect not only the amount that would go to spectrum suppliers, but also the amount that the prevailing FUS applicant ultimately would pay.[75]

This mechanism would simply write-down the price paid by FUS licensees to an amount far lower than the true price of demand, resulting in substantial forgone revenue for the taxpayer. Indeed, instead of providing taxpayers with the difference between the price of demand and the

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[73] 47 C.F.R. § 309(j)(8)(A)-(G).

[74] *See* T-Mobile Feb. 15, 2019 Letter at 3.

[75] *Id.*

price of supply, as Section 309(j) requires from an incentive auction, T-Mobile would allocate "whatever portion" of reverse auction proceeds the Commission decides to "retain for the benefit of American taxpayers" to the U.S. Treasury.[76] To make matters worse, T-Mobile's proposal would reduce that base of reverse auction proceeds to table scraps by forcing satellite operators to underbid ESOs, thereby decreasing reverse auction prices to well below the true price of supply.[77] Thus, while T-Mobile claims to advance a taxpayer-friendly auction that is "[c]onsistent with the Communications Act,"[78] what it has actually proposed is a convoluted taxpayer-funded subsidy that finds no support in the statute.

In addition to being unlawful and inequitable, T-Mobile's approach would eliminate any hope of achieving an efficient allocation of FUS spectrum among terrestrial licensees. A well-designed auction allocates licenses efficiently by assigning them to the participant with the greatest willingness to pay, which is assumed to be winning bidder. But a bid can only measure a participant's willingness to pay if the winning bidder *actually has to pay the amount that it bid at the end of the auction.* Under T-Mobile's version of an auction, however, the winning bidder will not have to pay the amount that it bid, because the mechanism described above will reduce the purchase price to a much smaller amount. Forward auction participants therefore will have every incentive to bid as high as they possibly can, limited only by their ability to cover the requisite upfront and down payments, secure in the knowledge that the bidding war between ESOs and satellite operators in the reverse auction will drive the actual cost down to a fraction of what the spectrum is actually worth. Thus, instead of assigning licenses to companies best equipped to build next-generation terrestrial networks, T-Mobile's procedure would simply

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[76] *Id.*

[77] *See* Section III.B, *infra.*

[78] T-Mobile Feb. 15, 2019 Letter at 7.

allocate mid-band spectrum to companies with the greatest access to financing. This is awful policy and hardly what Congress intended in crafting a statute to permit reverse auctions.

B. The reverse auction is also unlawful.

As the SSOs previously explained, the reverse auction proposed by T-Mobile is also unlawful, because it requires satellite operators to bid against earth station operators.[79] The discussion of satellite operator rights prompted by the *Public Notice* only further underscores the unreasonableness of T-Mobile's reverse auction design.

1. No "competing licensees" or price discovery.

Section 309(j) authorizes the Commission to hold incentive auctions only if "at least two *competing* licensees participate in the reverse auction."[80] The requirement that participants be "competing" licensees is fundamental to the operation of the reverse auction, which is intended to identify the price at which incumbents "would be willing to voluntarily relinquish some or all of their spectrum usage rights"[81] and provide them with "a share of the proceeds" from the repurposing.[82] Competition between auction participants ensures that the bid submitted by the winning supplier provides a useful appraisal of the "value" of the "rights" being "relinquished."[83]

Instead of creating a way for competing licensees to bid for the right to supply each market, however, T-Mobile proposes to fabricate "competition" where none exists by requiring ESOs and satellite operators to bid against each other. The problem with T-Mobile's proposal is

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79 *See* SSO Mar. 25, 2019 Letter at 9-10.

80 47 U.S.C. § 309(j)(8)(G)(ii)(II).

81 *See, e.g., Expanding the Economic & Innovation Opportunities of Spectrum Through Incentive Auctions*, Report and Order, 29 FCC Rcd. 6567, 6708 ¶ 325 (2014) ("*Broadcast Incentive Auction First R&O*").

82 *NPRM* ¶ 103.

83 47 U.S.C. § 309(j)(8)(G)(i).

that ESOs and satellite operators do not "compete" in any sense of the term—and the nature of satellite operator and ESO rights make that point plain.

To start, satellite operators and ESOs have entirely different rights that cannot be measured against each other. As discussed above, satellite authorizations provide rights to transmission and successful reception, free from interference from the FUS, anywhere in the United States. By contrast, earth station registrations provide protection from FS interference only for a particular earth station. A satellite operator thus gives up far more by relinquishing its rights to use spectrum in a given market. While a satellite operator would be giving up the right to serve all points in the entire market, ESOs would relinquish rights in one location alone.

Along the same lines, ESOs and satellite operators cannot participate in "competition" with one another because convincing ESOs rather than satellite operators to relinquish their rights would not actually clear the band for FUS use. Even in the absence of any registered earth stations in a market, satellite operators would still have the right to transmit free from harmful FUS interference throughout the market. As explained above, earth station registrations simply are not required for interference protection from the FUS.[84]

The fact that satellite operators are clearly beneficiaries of earth station registrations makes T-Mobile's reverse auction even more absurd. Receive-only earth stations exist specifically to receive the transmissions of satellite operators, and the protection against interference they can receive through licensing or registration is specifically tied to their "reception of signals . . . in the Fixed-Satellite Service."[85] The reason that receive-only stations may "register[] with the Commission" is to facilitate their coordination with "terrestrial

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[84] *See* Section I.B, *supra.*

[85] 47 C.F.R. § 25.102(b).

microwave stations in . . . the Fixed Service," so that satellite transmissions can continue to be successfully received.[86] Critically, the only earth stations that "may be registered" in the first place are those "that operate with U.S.-licensed space stations, or with non-U.S.-licensed space stations that have been duly approved for U.S. market access."[87] And for that reason, "earth station applicants are required to submit information that duplicates" much of the same "technical information provided by satellite operators in space station applications."[88] Thus, even if an ESO registration provided rights against FUS interference, it would not follow that ESOs should be permitted to relinquish those rights unilaterally. There can be no "competition" between participants in a reverse auction where the rights held by one participant are also intended to benefit the other.

To put the point in more practical terms, ESOs are *customers* of satellite operators, and their usage rights thus function as a complement to, not a substitute for, the rights of satellite operators. Thus, space station operators and ESOs have complementary and interrelated rights that protect satellite transmissions from harmful FS interference—they are two sides of a satellite network, not competitors with one another. This is not simply the view of the SSOs, or of satellite operators in general—it is the view the Commission expressed in its recent notice proposing to streamline the application and authorization process for satellite networks. As the Commission explained, the "separate licenses for earth stations and space stations in a satellite network" are designed to "provide for interference-free operation of both the ground component and space component of the satellite network."[89]

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86 *Id.* § 25.131(b).

87 *Id.*

88 *Part 25 Streamlining NPRM* ¶ 6.

89 *Id.* ¶ 4.

Importantly, it would be unreasonable to treat ESOs and satellite operators as "competing licensees" for the additional reason that doing so would undermine the fundamental objective of a reverse auction: valuing and compensating current uses of the band. Because the rights of satellite operators and ESOs are neither comparable nor rivalrous, there would be no reason to expect winning bids to reflect the actual value of the spectrum rights held. At best, T-Mobile's proposal would measure the utility to the least-used earth station alone—and reduce terrestrial operators' purchase price to that artificially deflated target. And at worst, T-Mobile's proposal would push ESO and satellite-operator bids down towards zero, as each group tries to underbid the other to ensure they receive *something* for relinquishing their rights, however small a fraction of the true value of the spectrum it may be. While rigging a reverse auction to include parties that are not competitors may be a nice way to subsidize terrestrial operators, it is inconsistent with both the text and purpose of the statute—and would leave taxpayers in the cold as well. Because the reverse auction would be fatally defective, the Commission cannot adopt T-Mobile's proposal in its current form.

2. No opportunity for operators to relinquish their rights "voluntarily."

The vast differential in value between satellite-transmit rights and earth-station-receive rights creates a separate, but related, legal problem. Under Section 309(j), reverse auctions must "determine the amount of compensation that licensees would accept in return for *voluntarily* relinquishing their spectrum usage rights."[90] To be conducted "voluntarily," an incentive auction must provide licensees with an opportunity to win a share of the proceeds if they place a bid that appraises with reasonable accuracy the value of their spectrum usage rights. Otherwise, the relinquishment would not be voluntary, but rather the result of regulatory compulsion. No

[90] 47 U.S.C. § 309(j)(8)(G)(ii)(I) (emphasis added).

reasonable licensee would willingly participate in an incentive auction that guaranteed them less than their existing rights are worth.

As explained, however, T-Mobile's version of an incentive auction would force satellite operators to bid pennies on the dollar of the actual value of their spectrum to have a chance of getting anything from the auction. The fact that space station operators would have no option but to participate in the incentive auction further demonstrates that the proposal would be fundamentally involuntary. Unlike past incentive auctions directed by the Commission, satellite operators would be unable to receive value for their relinquishment of spectrum through alternatives to the auction, such as by swapping cleared bandwidth for new authority to operate in substitute bandwidth.[91] Thus, the proposal would put satellite operators in a double bind: either they can forgo participation in the auction and accept literally nothing, or participate in the auction and accept next to nothing. Either way, it is administrative coercion, and not a voluntary choice, that results in the relinquishment of repurposed spectrum.

T-Mobile nevertheless suggests that the involuntary nature of its incentive auction is of no consequence because FUS deployments will have no effect on satellite transmission rights.[92] Specifically, T-Mobile contends that:

> Because the future ability of terrestrial licensees to use the C-band will be driven by the need to protect earth station operations (and not space-to-earth transmissions), satellite operators may continue to transmit using all 500 megahertz of that spectrum and serve earth stations in locations where they will continue to exist.[93]

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[91] *See Broadcast Incentive Auction First R&O* ¶ 3 ("recognizing "the importance of broadcasters; *see also Use of Spectrum Bands Above 24 GHz for Mobile Radio Services*, Fourth Report and Order, DA 18-180 (rel. Dec. 2018), ("*39 GHz Order*").

[92] *See* T-Mobile Apr. 11, 2019 Letter at 8.

[93] *Id.*

As explained above, T-Mobile's reasoning relies on a fundamental misunderstanding of satellite transmission rights.[94] Satellite operators have the right to transmit *and have their signals received* free from FUS interference everywhere in the country. Thus, FUS interference with ground reception of space-to-earth signals *is* interference with the space-to-earth transmission link. And even T-Mobile agrees that FUS deployments will make successful reception of space-to-Earth signals impossible.[95]

Moreover, contrary to T-Mobile's suggestion, clearing an *ESO* is insufficient to clear the *band* of all incompatible incumbent users. Again, earth station registrations are not required for interference protection from the FUS, and even if they were, an ESO's relinquishment of a registration would not prevent a satellite operator from providing the same service to another earth station in the same location, or close by. As a result, FUS deployments result in the loss of satellite transmission rights wherever they prevent the successful reception of satellite signals. This impairment occurs in locations where existing earth stations are "cleared," where existing earth stations are not "cleared," and where earth stations do not yet exist.

C. Section 316 cannot save T-Mobile's flawed proposal.

Perhaps acknowledging that no satellite operator in its right mind would "voluntarily" participate in its incentive auction, T-Mobile resorts to arguing that the Commission can coerce a band-clearing using its authority to modify licenses under Section 316 of the Act.

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94 *See* Section I.A, *supra.*

95 *See, e.g.*, T-Mobile Apr. 11, 2019 Letter at 8; T-Mobile Comments at 8 (noting that "[s]ame-area frequency sharing is not technically possible because protecting satellite receivers from harmful interference from terrestrial emissions will require large separation distances that make sharing across the band infeasible").

As numerous courts have held, however, "the Commission's section 316 power to modify existing licenses does not enable it to fundamentally change those licenses."[96] Thus, while it may be acceptable for the Commission to "impos[e] a limited obligation"[97] that is consistent with the licensee's continued ability to "provide essentially the same service,"[98] the Commission may not "eliminate" the authorization "entirely" with respect to a substantial amount of affected geography.[99] Yet that is precisely what T-Mobile has asked the Commission to do. The entry of FUS in the lower C-band will eliminate the ability of operators to provide satellite service altogether, because even T-Mobile agrees that nearby FUS deployments will make it virtually impossible for satellite signals to be received free from harmful interference. "[I]n the small-scale world of 'modifications,'" this total loss of spectrum access is an unquestionable—and impermissible—"big deal."[100]

None of the decisions cited by T-Mobile are to the contrary. T-Mobile relies on the Commission's 800 MHz proceeding to support its claim that the Commission can coerce satellite incumbents to vacate the band. There, however, the Commission used Section 316 to *upgrade* Nextel to more valuable PCS spectrum—based on a rebanding effort that Nextel supported.[101]

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96 *Cellco P'ship*, 700 F.3d at 543 (internal quotation marks and alteration omitted). *See also Community Television*, 216 F.3d at 1141; *MCI Telecommunications*, 512 U.S. at 228.

97 *Cellco P'Ship*, 700 F.3d at 544.

98 *Community Television*, 216 F.3d at 1142.

99 *MCI Telecommunications*, 512 U.S. at 229.

100 *Id.*

101 *Improving Public Safety Communications in the 800 MHz Band et al.*, Report and Order, Fifth Report and Order, Fourth Memorandum Opinion and Order, and Order, 19 FCC Rcd. 14,969 (2004).

T-Mobile fares no better in its reliance on the Commission's modification of Motient's license to operate in the L-band.[102] In that decision, the Commission did not forcibly evict a co-primary incumbent to make room for a new and incompatible service. To the contrary, the Commission modified, with Motient's consent, the assignment of specific frequencies to make *more* spectrum available for use for Motient's satellite system. Specifically, while the Commission had initially authorized Motient to use 28 megahertz of spectrum in the *upper* L-band, that spectrum never became available for use because of difficulties encountered in the "international coordination" process.[103] Accordingly, the Commission decided to assign "*lower* L-band frequencies to Motient in lieu of upper L-band frequencies that ha[d] been assigned to Motient."[104] With the modification, Motient swapped an assignment of 28 megahertz of useless spectrum for 20 megahertz of spectrum that it could actually use to provide global service. Just as in 800 MHz, the Motient license modification was completely *voluntary*, effectively *expanded* the licensee's spectrum use rights, and did not subordinate an incumbent to a newly allocated service. Indeed, neither decision involved a reallocation of spectrum at all.

T-Mobile also curiously relies on precedent from the DTV transition, but the license modifications at issue there do not compare.[105] To effectuate the DTV transition, the Commission "migrated" broadcasters "from one channel to another," allowing them to provide "essentially the same service," as the D.C. Circuit held.[106] That is a far cry from what T-Mobile

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102 *Establishing Rules and Policies for the use of Spectrum for Mobile Satellite Services in the Upper and Lower L-band*, Report and Order, 17 FCC Rcd. 2704 (2002).

103 *Id.* ¶ 3.

104 *Id.* ¶1 (emphasis added).

105 *Advanced Television Systems and Their Impact Upon the Existing Television Broadcast Service*, Fifth Report and Order, 12 FCC Rcd. 12,809 (1997).

106 *Community Television*, 216 F.3d at 1143.

seeks here: forcing satellite incumbents to *vacate* spectrum at cut-rate prices, while providing no alternative for them to obtain substitute bandwidth.

For much the same reason, the Commission's repacking of 39 GHz licensees does not support forcing satellite operators involuntary to vacate C-band spectrum.[107] Incumbent 39 GHz licensees that do not wish to participate in the incentive auction will have the option to migrate to spectrum that allows them to "maintain the overall value of [their] spectrum usage rights" on a MHz-POPs basis.[108] They also will have the option to relinquish those equivalent rights in exchange for an incentive payment.[109] T-Mobile has not proposed any mechanism for providing equivalent rights to satellite operators as part of its proposed incentive auction. Rather, T-Mobile asks the Commission to use Section 316 to eradicate the satellite operators' spectrum rights.

Finally, T-Mobile cannot reconcile its reliance on Section 316 with precedent allowing co-primary incumbents to benefit from the expansion of spectrum use rights during a spectrum repurposing.[110] Likewise, T-Mobile's proposal to clear incumbents by fiat in order to make room for a presently unallocated radio service would perform an end-run around well-established Commission policy providing that non-conforming operations can only be allowed on a non-interference basis.[111] In short, Section 316 cannot compensate for a fundamentally flawed and unlawful auction design. While the SSOs have no issue with a lawful, equitable, and practical auction-based transition, T-Mobile has yet to advance such a proposal.

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[107] *Use of Spectrum Bands Above 24 GHz for Mobile Radio Services*, Fourth Further Notice of Proposed Rulemaking, 33 FCC Rcd. 7674 ¶ 38 (2018).

[108] *See 39 GHz Order* ¶ 29.

[109] *See id.*

[110] *See* Section II.A*, supra.*

[111] *See* Section I.B, *supra.*

CONCLUSION

Whether authorized by a Part 25 license or by an FCC grant of U.S. market access, satellite operators have enforceable rights against interference from FUS deployments across the United States. These rights do not depend on the existence of registered earth stations. As a result, if the Commission reallocates the C-band to permit FUS operations, all satellite operators authorized to serve the United States in the C-band will lose valuable spectrum use rights. ESOs also will be adversely affected. In addition, because C-band rights are assigned on a non-exclusive basis, taxpayers also have a clear interest in this spectrum.

Thus, whether the Commission repurposes spectrum using an FCC-run auction or a privately run auction, it must ensure that all eight satellite operators authorized to serve the U.S. market in the lower C-band—and not just the big four members of the CBA—are compensated reasonably for their loss of spectrum rights, that ESOs have meaningful financial incentives to facilitate the band-clearing, and that taxpayers receive an equitable portion of the proceeds created by the sale of spectrum to prospective FUS operators. Neither the CBA nor T-Mobile have advanced proposals that accomplish these important goals. Accordingly, the Commission must decline their proposals until and unless they are reworked to ensure a more effective, equitable, and incentive-based transition. The distributional approach described in the SSOs' submissions would certainly accomplish these important goals.

Respectfully submitted,

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